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Application No.	2002/0493
Date of Filing	17 June 2002
Applicant	GERARD HAYES, an Irish company of Greenfields, Drombanna, County Limerick, Ireland.

Dated this 25 day of June 2003.

Clare O'Reilly

An officer authorised by the
Controller of Patents, Designs and Trademarks.

Application No. E020495

Form No.1

REQUEST FOR THE GRANT OF A PATENT

Patents Act, 1992

The Applicant(s) named herein hereby request(s)

☒ the grant of a patent under Part II of the Act

☐ the grant of a short term patent under Part III of the Act on the basis of the information furnished hereunder

1. Applicant(s)

Name: **GERARD HAYES**

Address: **Greenfields, Drombanna, Co. Limerick, Ireland**

Description/Nationality : **Irish,**

2. Title of Invention:

ANTI-SMOKING DEVICE

3. Declaration of Priority on basis of previously filed application(s) for same invention (Sections 25 & 26)

Previous Filing Date	Country in or for which filed	Filing No.

4. Identification of Inventor(s):

Name(s) of person(s) believed by applicants to be the inventor(s) address:
GERARD HAYES of Greenfields, Drombanna, Co. Limerick, Ireland

5. Statement of right to be granted a patent (Section 17(2) (b))

Date of assignment from inventors:

6. Items accompanying this Request - tick as appropriate

(i) ☒ prescribed filing fee

(ii) ☒ specification containing a description and claims
☐ specification containing a description only
☒ Drawings to be referred to in description or claims

(iii) ☐ An abstract

(iv) ☐ Copy of previous application(s) whose priority is claimed

(v) ☐ Translation of previous application whose priority is claimed

(vi) ☐ Authorisation of Agent (this may be given at 8 below if this request is signed by the applicant(s))

7. Divisional Application(s)

The following is applicable to the present application which is made under Section 24 -

Earlier Application No:
Filing Date:

8. Agent

The following is authorised to act as agent in all proceedings connected with the obtaining of a patent to which this request relates and in relation to any patent granted -

Name	Address
TOMKINS & CO.	**5 Dartmouth Road, Dublin 6.**

9. Address for Service (if different from that at 8)

TOMKINS & CO., at their address as recorded for the time being in the Register of Patent Agents.

Signed Name(s): by:
Capacity (if the applicant is a body corporate):

Date: **17 June 2002**

AUTO8217

TITLE OF THE INVENTION

Anti-smoking device

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to the tobacco art, and more particularly, to a device for introducing a wetted impact barrier into a smoking article.

Description of the prior art

There have been attempts to design tar and nicotine reducing elements for tobacco smoke described in the prior art and several of these elements contain means for moistening or humidifying a porous filter. Typically, a frangible module containing water or an aqueous solution is embedded in the filter and the module is compressed to release the liquid before the filter is used. The moistened filter material in the element then exhibits an improved ability to remove primary tars, nicotine, and certain other volatiles from the smoke.

For example, in U.S. Patent No. 3,884,246, to Eric E. Walker, a tobacco smoke filter element is comprised of a resilient, water impervious elongated tubular casing having a porous plug of filtering material disposed in each end of said casing. Opposed, mutually spaced, disc-like walls are disposed within said casing between said plugs, one wall within said casing between said plugs and one wall abutting the inner surface of each plug. Said walls define a chamber within the central portion of said casing and have at least one port in each wall. The device further includes at least one liquid containing module disposed within said chamber and extending between said walls, and said walls have at least one passage for allowing smoke through said filter element. Means carried by said element and cooperating between said module and at least one port in each of said walls direct liquid from said module through ports into said plugs responsive to compression of the external walls of said chamber, so that said plugs may

act selectively as a dry filter, or, when said casing is compressed, as a filter moistened by said liquid.

In U.S. Patent No. 3,428,049 to Leake et al., one or more of said modules are surrounded by a compressed filter material in the element. When the module is compressed, the liquid saturates the filter material, causing it to expand into the space occupied by the module. It is made as part of the cigarette, confined to the filter.

In U.S. Patent No. 3,635,226 to Horsewell et al., a liquid-containing capsule is disposed between an absorbent plug adjacent the tobacco and a nonabsorbent plug, such that when the capsule is compressed the liquid is released into the absorbent plug. U.S. Patent No. 3,596,665 to Lundegard also describes a frangible, liquid-containing module disposed between two plugs. Compression of this module releases the liquid into both plugs for enhanced filtering.

In addition, many different liquids have been encapsulated within the filter mechanism to moisten the filters. Examples thereof are water, glycerin, and aqueous solutions or emulsions containing aromatic flavouring agents. These liquids act, in the filter, primarily to cool the smoke and to facilitate condensation of volatile components therein on the filter substrate.

The above mentioned filters describe smoke filters containing collapsible or frangible capsules filled with water or other liquids. Filter elements containing liquid pose a problem of retaining the liquid during storage, and those containing capsules or other containers of a liquid present within the filter structure cause a problem when the liquid is released, as the liquid holds the filter element in a collapsed state after pressure on the filter has been released.

The aforementioned prior filters lack the desired versatility necessary for widespread acceptance.

In the above mentioned products, the liquid products were incorporated inside the filter or made as an attachment to the filter.

U.S. Patent No's. 4,003,387, 4,046,153 and 3,797,644 are directed to a disposable cigarette holder made of plastics, which has a wet cotton filter on the inside. The wetness is effected by glycerin and water. The holder is attached to the cigarette which draws smoke into and over the wet cotton filter, held together by plastics casing,

into the mouth, which causes the tar and nicotine in the smoke (total particulate matter) to adhere onto the fibre wet filter. This product is thus an attachment. Most smokers object to having a foreign object, such as a holder made of plastics, in their mouth.

As a practical matter, the processes of manufacturing and packaging cigarettes and the necessity for storing cigarettes for varying periods of time have proven to be affected because of damage to filters, drying out, or impact or disfiguring of the filter with moisture before being smoked.

Another example, in U.S. Patent No. 3,319,632 to Henry Burbig, relates to a cigarette moistener device. In this device, the interior of the filter tip of a cigarette is moistened. The device is topped by a receptacle and is provided with a hollow needle extending axially thereof, the needle having a number of openings in the side thereof and the hollow needle extending into the moistener container. Where the moistener container is a squeeze bottle with a resilient side, the insertion of the filter into the receptacle and squeezing the sides of the moistener container will result in impregnating the inner part of the filter with moisture. The utilization of a hollow needle of greatly restricted diameter will meter the amount of moisture thus expressed on a single squeeze, to impregnate the interior of the cigarette filter with water.

U.S. Patent No. 5,158,099 describes a wet impact barrier filter medium for a smoking article wherein the wet impact barrier is coated across the end of the filter substantially transverse of the smoking article. The wet impact barrier is applied in sufficient amount so as to reduce tar and nicotine produced by the products of combustion.

International Publication No. WO92/14371 is a continuation-in-part of U.S. Patent No. 5,158,099 and relates to a wetted impact barrier which is separate and in no way attached to or bound to cigarette filters until the wetted impact barrier is physically applied to create a wetted impact barrier at the top end surface of the cigarette filter where the smoke is drawn into the mouth. The publication also describes a kit and a method of application of said kit to a cigarette in order to reduce the tar and nicotine inhaled by the cigarette smoker.

Figures 1 to 4 of the present application correspond to Figures 2, 8, 9 and 5 respectively of International Publication No. WO 92/14371. In particular, Figure 1

shows the free end at the top of the filter of the cigarette showing a square type recess 12 in the form of a well in the filter end face. The wetted surface designated by reference 13 represents an impact barrier formed at the top surface of the filter by application of a quantity of liquid to the recess 12. Figure 2 illustrates a cross-shaped recess configuration 19 in the top surface 11 of the filter of a cigarette which is as yet untouched by any wet impact barrier. Figure 3 represents a further end view showing a cigarette before a wetted impact barrier is applied to the top surface 11 of the filter. A circular recess 27 is in this case provided in the top surface 11 of the filter. Figure 4 illustrates the impact-barrier forming kit described in International Publication WO 92/14371, said kit comprising a dispenser and instructions.

In the device disclosed in International Publication WO 92/14371, barrier-forming liquid is inserted into the filter by making a hole in the end of the filter and squeezing a prescribed number of drops into the hole. A hole which is substantial in size relative to the size of the filter is gouged out. When the recess is charged with barrier-forming liquid, this spreads out through and soaks into the filter material at and adjacent to the end surface, to define the wet impact barrier. However, this can engender problems. For example, when the fluid is put into the filter, some users may taste the fluid, which in turn has an adverse effect on the efficiency of the smoking deterrent programme. Such a feature is not very encouraging for a user who intends to quit smoking.

There is therefore a need for a more effective method for delivery of fluid to provide an impact barrier in a smoking article. The invention provides a method wherein the fluid is inserted into the side of the filter, preferably towards the base of the filter, near the tobacco, by piercing a small hole and injecting the fluid in from a cartridge or container. The barrier is thus established at a location spaced from or remote from the top or free end surface of the filter, which is received in the mouth.

The invention thus also meets the requirement of providing a method of inserting a barrier fluid into a filter-tip so that the fluid is dispersed at a position in the filter sufficiently distant from the end of the cigarette which is put into the mouth of the user as will minimise the risk of the user tasting the fluid. Ease of application of barrier-forming fluid and minimisation of the risk of tasting the fluid are thus provided by the

invention and encourage use of the related smoking termination programme and adherence thereto by users.

BRIEF SUMMARY OF THE INVENTION

The invention provides a device for providing a distributed zone of fluid in a filter of a smoking article comprising:

(a) a container for a fluid which forms a wet impact barrier when inserted into a smoking article, and

(b) a delivery feature communicating between the container and an outlet of the delivery feature, for transfer of said fluid to the smoking article, wherein the delivery feature comprises at least in part a tube of significantly lesser diameter than the diameter of the smoking article, and the combination of container and delivery feature provides for placement of a substantially definable quantity of said fluid at a predetermined location within the smoking article.

In a particular embodiment, the delivery feature of the device according to the invention comprises an injection needle. Control of delivery of fluid from the container may be facilitated by the construction of the container. Preferably, in the device according to the invention, at least a portion of a wall of the container is resilient and/or pliable. This feature enables the user to control the delivery of fluid into the needle and ultimately into the filter tip by applying suitable pressure on the exterior sides of the container in a regulated manner.

The device according to the invention allows a distributed zone of impact barrier fluid to be formed. The fluid forms a blocking zone in the filter, trapping the tar and nicotine formed upon combustion.

The device of the present invention allows the fluid forming the wet impact barrier to be injected into the filter-tip at a location spaced from the end of the cigarette which the smoker puts in the mouth. The introduction of fluid at this position ensures that the fluid will not come into contact with the user's lips, thereby decreasing the chance of the user tasting the fluid. In use, the device of the present invention enables the insertion of fluid into the filter without causing lateral crushing of the filter material.

This manner of insertion ensures that there is less damage to the fibrous structure of the filter as compared with that of devices of the prior art.

In the device according to the invention, the blocking fluid may comprise for example a corn syrup base, sodium benzoate, potassium sorbate, citric acid, water and colouring. The composition is such that it may be consumed as a food. It is not a drug composition and therefore use thereof has no risks or side-effects if inadvertently ingested.

Use of the device according to the invention has shown over 97% reduction of tars and nicotine delivery from a normal filtered cigarette when 3 drops of fluid are used. Use of the device according to the invention results in a reduced amount of nicotine reaching the lungs. The smoker is thus gradually "weaned" off the nicotine and is eventually able to give up smoking.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be further described by reference to the accompanying drawings in which:

Figure 1 shows a partial cross sectional view of a cigarette having a square-shaped wellular recess (prior art WO 92/14371),

Figure 2 shows a top end view of a cigarette having a cross shaped recess configuration (prior art WO 92/14371),

Figure 3 shows a top end view of a cigarette having an oval shaped recess configuration (prior art WO 92/14371),

Figure 4 shows a depiction of the components of the kit disclosed in WO 92/14731,

Figure 5 is a pictorial representation of an injection type arrangement according to the present invention for introducing the barrier-forming fluid into the filter-tip, and

Figure 6 shows a section through the region of the cigarette where the barrier is injected.

DETAILED DESCRIPTION OF THE DRAWINGS

Figures 1 to 4 illustrate the device of the prior art, WO 92/14371 and have been discussed previously hereinbefore.

Referring to Figure 5, the device according to the invention comprises a container 101 for holding a wet impact barrier forming fluid. The container 101 is provided with a delivery feature comprising an injection needle 102. The injection needle 102 may be inserted into a filter tip 103 at a suitable location for transfer of the fluid into the filter tip 103 so as to form a wet impact barrier 104 (Figure 6). The wall portions 105 of the container 101 are resilient/pliable, thereby allowing for expulsion of fluid contained therein and control of the quantity of fluid delivered by applying pressure to the exterior of the container 101. The extent of the pressure applied regulates the amount of fluid discharged, the rate of discharge and the quantity ejected into the filter-tip 103.

The injection type arrangement of the present invention thus allows the barrier-forming fluid to be introduced into the filter-tip 103 at a location spaced from the end 106 of the cigarette 107 which the smoker puts in the mouth. The fluid is introduced at a location sufficiently spaced from the mouth end 106 of the cigarette 107 so that the wet barrier is not tasted by the smoker.

Figure 6 shows an enlarged view of the filter 103 of a cigarette 107, in section in the region of the filter 103 where the barrier fluid is injected. Reference 108 indicates the aperture formed by the needle 102 following injection of the barrier-forming fluid. The fluid, when injected, distributes itself through the filter-tip medium 103. The shading designated by reference 104 indicates the region where the barrier is located when said fluid has distributed itself. The fluid disperses through the material of the filter 103, forming a viscous barrier which traps the tar and nicotine produced by combustion.

The words "comprises/comprising" and the words "having/including" when used herein with reference to the present invention are used to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

Claims

1. A device for providing a distributed zone of fluid in a filter of a smoking article comprising:

(a) a container for a fluid which forms a wet impact barrier when inserted into a smoking article, and

(b) a delivery feature communicating between the container and an outlet of the delivery feature, for transfer of said fluid to the smoking article, wherein the delivery feature comprises at least in part a tube of significantly lesser diameter than the diameter of the smoking article, and the combination of container and delivery feature provides for placement of a substantially definable quantity of said fluid at a predetermined location within the smoking article.

2. A device according to Claim 1, wherein the delivery feature comprises an injection needle.

3. A device according to Claim 1 or 2, wherein control of delivery of fluid is facilitated by the construction of the container.

4. A device according to any preceding claim, wherein at least a portion of a wall of the container is resilient and/or pliable.

5. A device according to any preceding claim, substantially as described herein with reference to and as shown in the accompanying drawings.

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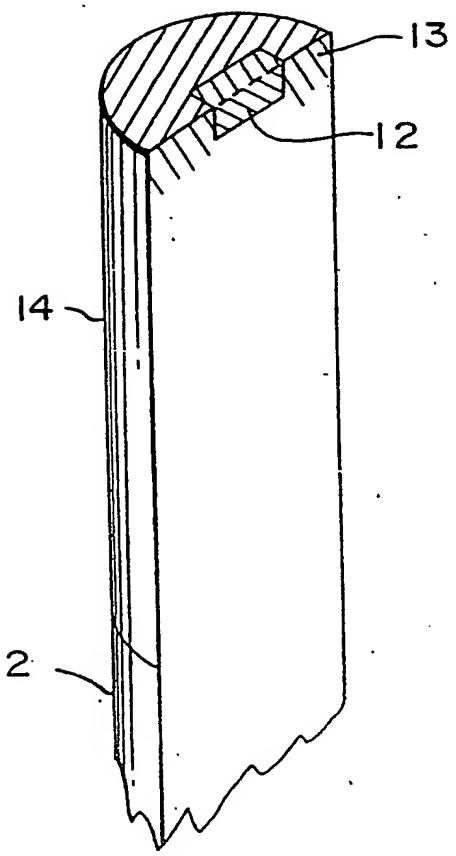


Fig. 1

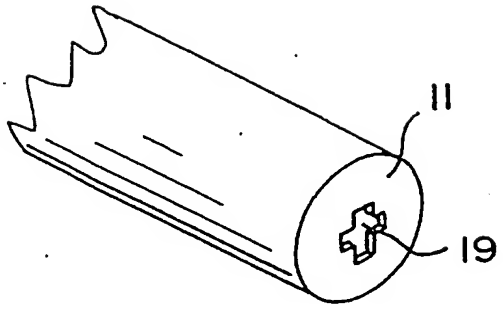


Fig. 2

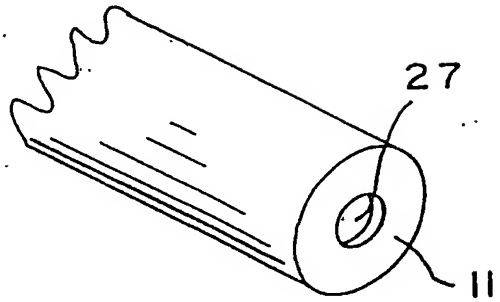
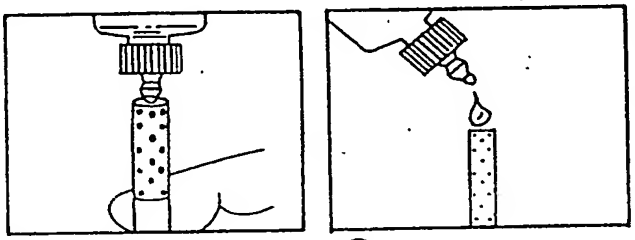


Fig. 3

Fig. 4

INSTRUCTION SHEET

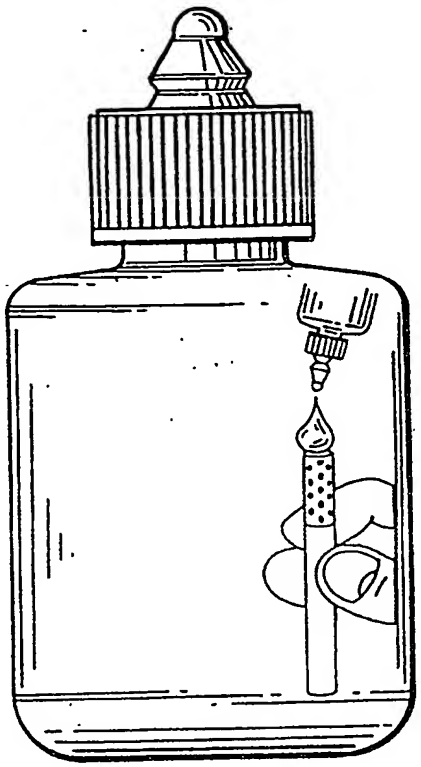
HOW TO USE:



1 Invert applicator tip into cigarette filter, making a small cavity.

2 Squeeze bottle to dispense a drop of solution onto cigarette filter tip. With tip of applicator spread solution to cover white surface of cigarette filter so no white shows.

3 Allow 5 seconds for solution to be absorbed



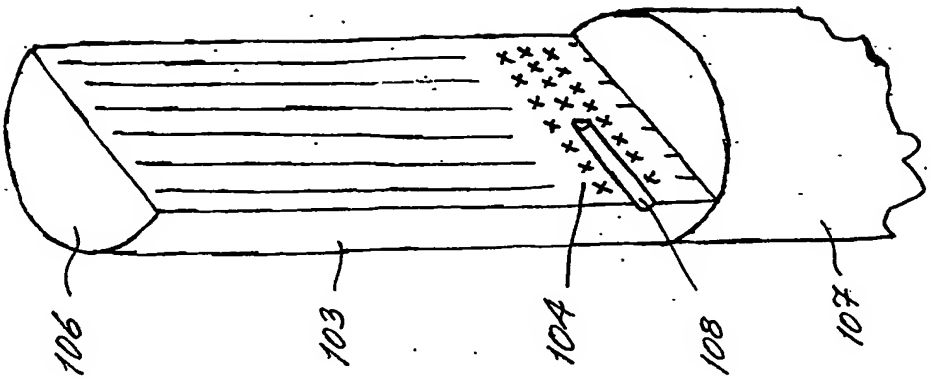


Fig. 6

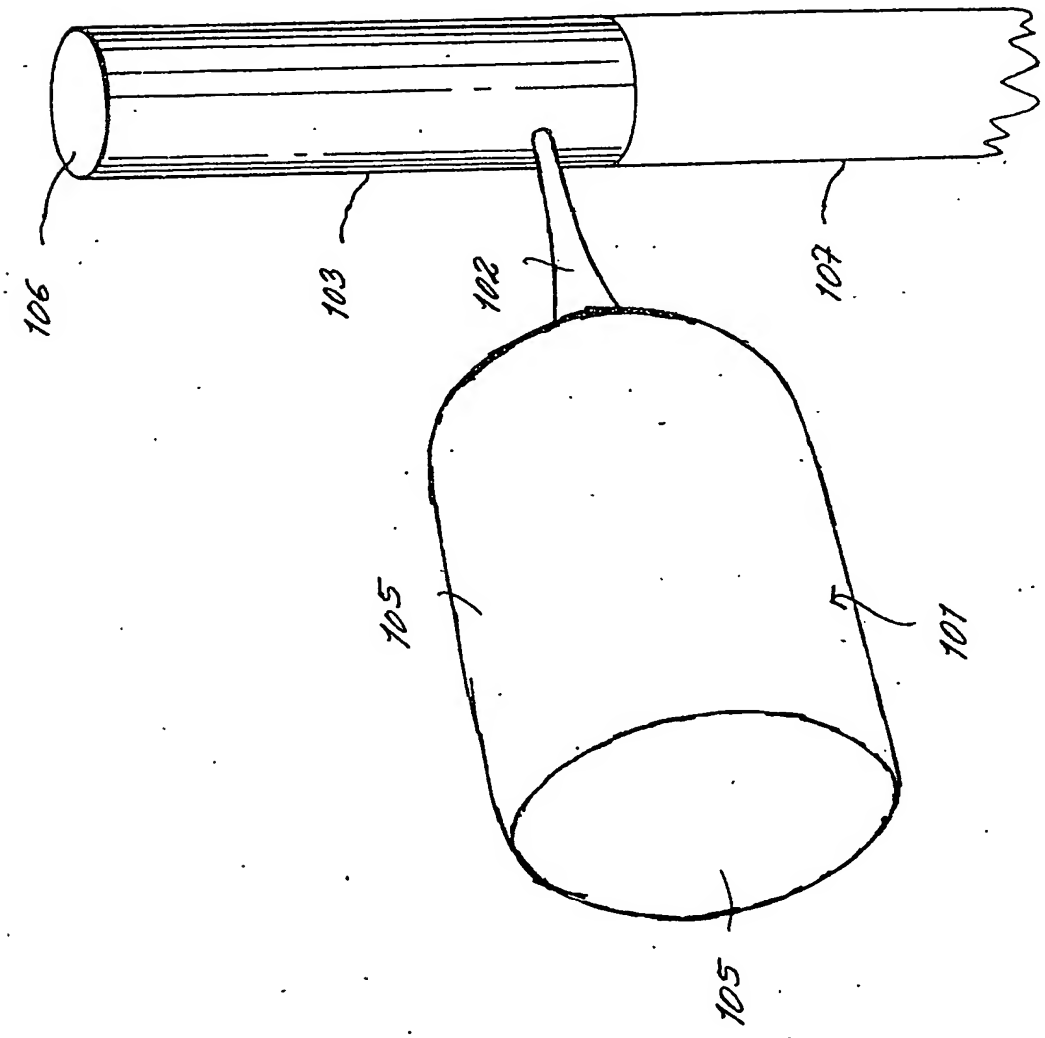


Fig. 5